

Remarks

Amendments to the Specification

The specification has been amended as indicated above to correct obvious typographical errors. Support for the amendments can be found in numerous locations throughout the specification (e.g., "beam quality" in ¶ [0037] and again (correctly) in ¶ [0042]; "first rare earth dopant" in ¶ [0037]; wavelength can be "changed" (not "hanged") in ¶ [0058] and [0059] ("changing", different verb tense); "first fibre pump module" in ¶ [0045]; and "pump" (as a verb, and not "pup") in ¶ [0042]). No new matter has been added to the specification by way of the amendments.

Amendments to the Drawings

The drawings have been amended as indicated above to overcome the objection to the drawings. Specifically, reference numerals 30 and 20 were added to Fig. 11 at sheet 3 of 4. Support for these amendments can be found at least in Figs. 3 and 10. No new matter has been added to the drawings by way of the amendments.

Amendments to the Claims

Claim 63 has been amended as indicated above. Support for the amendments can be found in the specification as follows:

- For "pump radiation emitted by the second amplifying waveguide":
¶ [0017] and ¶ [0060];



- For "wherein the first rare-earth dopant is selected to absorb the pump radiation more strongly at the first wavelength than the second wavelength": ¶ [0062]; and
- For "thereby providing a means to modulate the optical radiation emitted by the apparatus from on to substantially off": ¶ [0060]

No new matter has been added by way of the amendments to the claims.

Election/Restrictions

The Examiner has restricted examination to claims 63 and 68. The examiner stated that the Applicants have traversed the prior restriction requirement "on the grounds that there were too many species identified by the examiner." For the record, this was not the Applicants' basis for the traverse. Rather, the Applicants previously stated:

"The Applicants contend that the Examiner has identified species which are unnecessarily restrictive, and that the Examiner is able to search on a claim which is broader than the provisionally elected claim (claim 67) [sic]. Further, the Applicants contend that new claim 63, as currently presented, is a generic claim which is not so broad as to impose an unreasonable burden on the Examiner to search and examine."

The Applicant also previously stated:

"The Applicants also contend that claim 63 is generic, and that all of the remaining claims which depend from claim 63 (either directly or indirectly,



i.e., claims 33-35, 38-41, 44, 47-53, 56-62 and 64-69) are fully consistent with claim 63.”

For these reasons, the Applicants are only withdrawing claims 70 and 71 at this time. Accordingly, if the Examiner finds that claim 63 (as currently amended) is now allowable, then all of the claims which depend from claim 63 (i.e., claims 33-35, 38-41, 44, 47-53, 56-62 and 64-69) should also be allowed.

Objections to the Drawings

The drawings have been objected to for the reasons set forth at page 2 of the Office action. Specifically, that Fig. 11 does not show reference numbers 20 and 30, which are mentioned in the description of Fig. 11.

In response to the objection to Fig. 11, a Replacement Sheet for drawing sheet 3 (containing Figs. 10 and 11) is provided herewith, wherein Fig. 11 has been amended to add the missing reference numbers (20 and 30).

The Applicants contend that the drawings now comply with 37 CFR 1.84(p)(5), and respectfully request that the objection to Fig. 11 be removed.

Claim Rejections - 35 USC § 112

Claim 63 has been rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth at the bottom of page 2, and the top of page 3, of the Office action. Specifically, in the action it is stated:

“The applicant have added a new limitation “first optical fiber is multi-mode”, this is inconsistent with the specification which discloses the



second optical fiber to be multi-mode. Also, this is inconsistent with the general teaching of the art, since it is well known that the output fiber (1st fiber) should be single-mode. For the purposes of compact prosecution the examiner shall interpret the claim limitation as “second optical fiber is multi-mode”.

The Applicants traverse this rejection on the following grounds. In the first instance, the Applicants contend that this limitation (“first optical fiber is multi-mode”) is fully supported by the specification. Specifically, at ¶ [0015] of the published application (i.e., the original specification) it is stated: “The first optical fibre may be single mode or multi mode.” (Emphasis added.) Further, at ¶ [0016] of the published application (i.e., the original specification) it is stated: “The second optical fibre may be single mode or multi mode.” The Applicants fully intended that in claim 63 the first fiber should be limited to being a multi-mode fiber, and accordingly the Examiner’s assumption (for purposes of advancing prosecution) that the first fiber is single-mode is erroneous.

Second of all, the Examiner’s has stated: “this [i.e., output fiber is multi-mode] is inconsistent with the general teaching of the art, since it is well known that the output fiber (1st fiber) should be single-mode.” Notwithstanding, the Applicants have chosen to use a multi-mode fiber as the first (or output) fiber, since the output power of a single mode fiber is limited by optical damage and non-linear effects in the fiber, and is thus undesirable for use in an application wherein the power output by the laser is on the order of 100 W to 10 kW. (See ¶ [0042] of the published application.)



For at least these reasons, the Applicants contend that claim 63 does comply with the requirements of 35 U.S.C. § 112, first paragraph, and therefore request that the rejection of claim 63 as not complying therewith be removed.

Claim Rejections - 35 USC § 102

Claims 63 and 68 have been rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,530,710 (hereinafter, "Grubb").

The Applicants respectfully traverse this rejection, for the following reasons.

As a starting point, according to MPEP 2131, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (Quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).) Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." (*Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).) The Applicants contend that Grubb does not meet these requirements.

Claim 63 has been amended to now clarify that:

- "the apparatus [comprises] a means to change the wavelength of the pump radiation emitted by the second amplifying waveguide between a first wavelength and a second wavelength" [see line 20]; and
- "the first rare-earth dopant is selected to absorb the pump radiation more strongly at the first wavelength than the second wavelength" [see lines 21-22]; and



- the recited structure “thereby [provides] a means to modulate the optical radiation emitted by the apparatus from on to substantially off” [see lines 26-27].

These three limitations, taken together (and in conjunction with the rest of claim 63), provide that if the pump radiation is at the first wavelength, then the pump radiation is absorbed by the core of the first optical fibre which will then emit its power in essentially a single mode. And when the pump radiation is at the second wavelength, the pump radiation will not be absorbed by the core of the first optical fibre. So the first optical fibre will emit this pump radiation over a much larger area (e.g., 250,000 μm^2 fibre area compared to 50 μm^2 core area), and will have several orders of magnitude less brightness. This is described in detail in the application at ¶ [0058] and more so at ¶ [0060] - “Instead of switching the laser diodes on and off, the fibre laser can be controlled with a lower power signal.” Put another way, by changing the wavelength of the pump radiation emitted by the second amplifying waveguide, the output of the first amplifying waveguide can be modulated.

Regarding Grubb, the configuration recited in claim 63 is substantially different than the apparatus described by Grubb. Specifically, with respect to Fig. 1 of Grubb, the pumping source 18 only emits output at one wavelength (980 nm – see Col. 5 line 65 to Col. 6 line 1) – that is, the apparatus of Grubb does not include a “means to change the wavelength of the pump radiation emitted by the second amplifying waveguide between a first wavelength and a second wavelength”, as required by claim 63. Rather, in Grubb the radiation emitted by the pumping source is always the



same (i.e., 980 nm) - it does not change wavelengths, as does the emitted radiation in the apparatus of claim 63.

Further, Grubb does not provide for (or even suggest) an apparatus that can modulate the output of the amplifying waveguide, unlike the apparatus of claim 63 (as described above). Indeed, there would be no reason to do this in the apparatus of Grubb since it would be far simpler and cheaper to turn the pump diodes on and off at the powers contemplated by Grubb (i.e., 250-500 mW, per Col. 7 lines 17-18). (Note that the apparatus of the Applicants' invention is capable of operating at powers in excess of 100W, as indicated at ¶ [0018].)

Moreover, Grubb specifies that the amplifier 16 (Fig. 1) should have a single mode core, and that the pump source 18 should emit the pump radiation in a single mode. Applicants' claim 63, on the other hand, specifies that the amplifier ("first optical fiber") is a multimode optical fiber (which makes it suitable for high power operation (e.g., >100W)).

For at least all of these reasons, the Applicants contend that claim 63 (as currently amended), is not anticipated by Grubb. The Applicants therefore request that the rejection of claim 63 as being anticipated by Grubb be removed and the claim allowed. Further, since claims 33-35, 38-41, 44, 47-53, 56-62 and 64-69 depend from claim 63 (either directly or indirectly), it is axiomatic that they too should be allowed for at least the same reasons that claim 63 should be allowed.

(Continued on next page.)



Summary

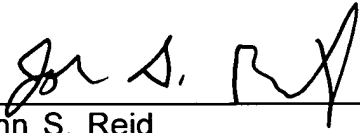
The Applicants believe that this response constitutes a complete reply to the Office action of June 19, 2008, and therefore request timely allowance of claims 33-35, 38-41, 44, 47-53, 56-69. The Examiner is respectfully requested to contact the below-signed representative if the Examiner believes this will facilitate prosecution toward allowance of the claims.

Respectfully submitted,

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